The estimated capital cost of setting up a solar power plant is in the range of Rs. 16 crore to Rs. 20 crore per MW and the cost of generation is around Rs. 12 to Rs. 15 per unit, depending upon technology, efficiency solar insolation etc.

(b) In order to make solar energy systems more cost effective, the Government has taken several steps which include (i) research and development to reduce the costs, improve the efficiency and performance of solar energy systems, (ii) incentives to manufacturers, commercial users and powers project developers; and (iii) subsidy or soft loans to encourage utilization of solar energy systems.

Power stations

†*382. SHRI JAI PARKASH AGGARWAL: Will the Minister of POWER be pleased to state:

(a) the total number of power stations/sub-stations in the States, including Delhi;

(b) the extent to which the capacity of power generation has increased during the last three years, year-wise and power station-wise;

(c) whether Government proposes to increase the power generation capacity of these power stations; and

(d) if so, the details thereof?

THE MINISTER OF POWER (SHRI SUSHILKUMAR SHINDE): (a) According to the information available with the Central Electricity Authority, the total number of power generating stations of the Utilities in the country as on 31st March, 2008 was 445, which includes 4 power generating stations located in Delhi.

Power sub-stations are in the transmission and distribution segments, depending on the level of required voltage transformation and do not add to the capacity of power generation.

(b) The enhancement in capacity of power generation projects is a continuous process and is achieved through addition of new generating capacity as well as Renovation, Modernisation, Uprating and Life Extension of operating plants whose performance declines with age. New capacity addition during 2005-06, 2006-07 and 2007-08 was 3,488.28 MW, 7,074.80 MW and 9263 MW respectively. The year-wise and power station-wise details are given in the Statement-I. (*See* below) The State-wise and Power Station-wise details of projects in which increased generation capacity has been available by virtue of Uprating under the Renovation, Modernization and Uprating Scheme during the last three years are enclosed as Statement-II. (*See* below) Normally this exercise is restricted to restoring declining efficiency level of performance.

(c) and (d) The enhancement in power generation capacity of existing and recently uprated generating units referred to in Statement-II is not envisaged during the Eleventh Plan. However, capacity addition of 78,577 MW is envisaged during the Eleventh Plan through new power plants, out of which projects aggregating 9,263 MW have been commissioned during 2007-08 and projects of 62,847 MW capacity are under construction under various power generation companies/Boards.

† Original notice of the question was received in Hindi.

Statement-I

List of Power Stations commissioned during 2005-06 to 2007-08

Power Stations commissioned during 2005-06

Station	State	Sector	Capacity Addition (MW)
1	2	3	4
Hydro			
Sardar Sarovar H.E.P. Unit 2	Gujarat	State (Joint)	200.00
Sardar Sarovar H.E.P. Unit 3	Gujarat	State (Joint)	200.00
Sardar Sarovar H.E.P. Unit 4	Gujarat	State (Joint)	200.00
Sardar Sarovar H.E.P. Unit 5	Gujarat	State (Joint)	200.00
Dhauli Ganga H.E.P. Unit 3 & 4	Uttarakhand	Central	140.00
Dhauli Ganga H.E.P. Unit 2	Uttarakhand	Central	70.00
Dhauli Ganga H.E.P. Unit 1	Uttarakhand	Central	70.00
Almatti Dam Hy. Power Project Unit 5	Karnataka	State	55.00
Almatti Dam Hy. Power Project Unit 6	Karnataka	State	55.00
Pykara Ultimate Unit -I	Tamil Nadu	State	50.00
Pykara Ultimate Unit -II	Tamil Nadu	State	50.00
Pykara Ultimate Unit -III	Tamil Nadu	State	50.00
Western Yamuna canal	Haryana	State	14.40
Badiyakot	Uttarakhand	State	0.05
Badrinath	Uttarakhand	State	0.03
Gangrel	Jharkhand	State	5.00
Total Hydro			1359.48

Power Stations commissioned during 2006-07

Station	State	Sector	Capacity Addition (MW)
Thermal:			
Kurrupur CCPP	Tamil Nadu	Private	49.80
Jojobera T.P.P. Unit-4	Jharkahand	Private	120.00
Rihand S.T.P.P. Unit-4, Stage-II	Uttar Pradesh	Central	500.00
Jegrupadu C.C.P.P. Extn.	Andhra Pradesh	Private	140.00
Valeuthruvi, C.C.P.P. Unit-6	Tamil Nadu	Private	38.00

1	2	3	4
Jegrupadu C.C.P.P.	Andhra Pradesh	Private	80.00
Akrimota Lignite T.P.P. Unit-2	Gujarat	State	125.00
Vemagiri C.C.P.P.	Andhra Pradesh	Private	233.00
Dhuvran C.C.P.P.	Gujarat	State	72.00
Rokia Gas Power Station Unit-6	Tripura	State	21.00
Parichha T.P.P. Unit-6	Uttar Pradesh	State	210.00
Total Thermal			1588.00
Nuclear:			
TAPP Unit-3 & 4	Maharashtra	Central	540.00
Total 2005-06			3488.28

1	2	3	4
Hydro:			
Sardar Sarovar RBPH	Gujarat	State (Joint)	800.00
Tehri	Uttarakhand	Central	1000.00
Bhawani Katlai Barrage	Tamil Nadu	State	30.00
Bansagar Tons	Madhya Pradesh	State	10.00
Madhikheda			40.00
Bansagar Tons	Madhya Pradesh	State	10.00
Larji HEP	Himachal Pradesh	State	126.00
Karbi Langpi	Himachal Pradesh	State	100.00
Dulhasti HPS	J&K	Central	390.00
Lower Malankara Small HEP	Kerala	State	10.50
Lower Meenamurthy Small HEP	Kerala	State	3.50
Kambang Small HEP	Arunachal Pradesh	State	2.00
			2.00
Sippi Small HEP	Arunachal Pradesh	State	2.00
			2.00
Total Hydro			2528.00

Power Stations commissioned during 2007-08

Station	State	Sector	Capacity Addition (MW)
1	2	3	4
Thermal:			
Vindhyachal STPS	Madhya Pradesh	Central	500.00
			500.00
Unchahar TPS	Uttar Pradesh	Central	210.00

1	2	3	4
Parichha TPS	Uttar Pradesh	State	210.00
Rayal Seema TPS	Andhra Pradesh	State	210.00
New Parli TPS	Maharashtra	State	250.00
Giral TPP (Lignite)	Rajasthan	State	125.00
Vallenthreavi CCPP (GT)	Tamil Nadu	Private	14.80
Vemagiri CCPP (GT)	Andhra Pradesh	Private	137.00
Ratnagiri (Dabhol)	Maharashtra	Central	480.00 260.00
Dholpur Gas	Rajasthan	State	110.00
Kahalgaon	Jharkhand	Central	500.00
Mejia	DVC	Central	250.00
Tarapur	Maharashtra	Central	540.00
Korba TPS (East)	Chhattisgarh	Central	250.00
Total Thermal			4546.80
Total 2006-07			7074.80
Hydro:			
Purulia Pumped Storage (Unit-4)	West Bengal	State	225
Purulia Pumped Storage (Unit-3)	West Bengal	State	225
Purulia Pumped Storage (Unit-2)	West Bengal	State	225
Omkareshwar HEP (Unit-1)	Madhya Pradesh	Central	65
Omkareshwar HEP (Unit-2)	Madhya Pradesh	Central	65
Omkareshwar HEP (Unit-3)	Madhya Pradesh	Central	65
Omkareshwar HEP (Unit-4)	Madhya Pradesh	Central	65
Omkareshwar HEP (Unit-5)	Madhya Pradesh	Central	65
Omkareshwar HEP (Unit-6)	Madhya Pradesh	Central	65
Omkareshwar HEP (Unit-7)	Madhya Pradesh	Central	65
Omkareshwar HEP (Unit-8)	Madhya Pradesh	Central	65
Purulia Pumped Storage (Unit-1)	West Bengal	State	225
Balimela Extn. HEP (Unit-7)	Orissa	State	75
Maneri Bhali (Unit-1)	Uttarakhand	State	76
Maneri Bhali (Unit-3)	Uttarakhand	State	76
Maneri Bhali (Unit-4)	Uttarakhand	State	76

Power Stations commissioned during 2007-08

Station	State	Sector	Capacity Addition (MW)
1	2	3	4
Teesta V Unit-2	Sikkim	Central	170
Maneri Bhali Unit-2	Uttarakhand	State	76

1	2	3	4
Teesta V Unit-3	Sikkim	Central	170
Balimela Extn. HEP Unit-8	Orissa	State	75
Teesta V Unit-1	Sikkim	Central	170
Jurala HEP Unit-1	West Bengal	State	39
Total Hydro			2423
Thermal:			
Sipat STPS (Unit-4)	Chhattisgarh	Central	500
Paras TPS (Unit-4)	Maharashtra	State	250
Dholpur CCPP GT-2	Rajasthan	State	110
Dhuvaran CCPP Extn.	Gujarat	State	40
Sanjay Gandhi TPS (Unit-5)	Madhya Pradesh	State	500
Raigarh TPP Unit-1	Chhattisgarh	Private	250
Raigarh TPP Unit-3	Chhattisgarh	Private	250
Mejia TPS Unit-6	DVC	Central	250
Ratnagiri GP Block-3	Maharashtra	Central	740
Santaldih TPP Unit-5	West Bengal	State	250
Yamuna Nagar TPS Unit-1	Haryana	State	300
Rayalseema TPS-II Unit-4	Andhra Pradesh	State	210
Durgapur TPS Unit-7	West Bengal	State	300
Bellary TPP Unit-1	Karnataka	State	500
Korba (E) TPP Stage V Unit-1	Chhattisgarh	State	250
Sagardighi TPP Unit-1	West Bengal	State	300
Bakreshwar TPS-II Unit-1	West Bengal	State	210
Dholpur CCPP	Rajasthan	State	110
Lehra Mohabbat TPS-II ST (Unit-3)	Punjab	State	250
Raigarh TPP Unit-2	Chhattisgarh	Private	250
Kahalgaon STPS-II Unit-6	Bihar	Central	500
Yamuna Nagar TPS Unit-2	Haryana	State	300
Total Thermal			6620
Nuclear:			
Kaiga Unit-3	Karnataka	Central	220
Total 2007-08			9263

Statement-II

State-wise and Power station-wise details of project in which Capacity benefits available on account of Uprating of Generating Units during 2005-06 to 2007-08

(Status as on 31.03.2008)

Sl. No.	Project, Agency	Capacity (MW)	Available Capacity Before R&M (MW)	Actual Capacity After R&M/ Uprating (MW)	Benefits (MW)	Year of Completion
Kerala						
1.	Neriamangalam, KSEB	3x15	3x15	3x18	9.00	2006-07
Tamil Nadu						
2.	Papanasam, TNEB	4x7	4x7	4x8	4.00	2005-06
3.	Mettur Dam, TNEB	4x10	4x10	4x12.5	10.00	2007-08
Orissa						
4.	Hirakud-I, Unit- 3 & 4, OHPC	2x24	2x24	2x32	16.00	2005-06
	Total		161.00	200.00	39.00	

Generation of renewable energy

*384. SHRI MAHMOOD A. MADANI: Will the Minister of NEW AND RENEWABLE ENERGY be pleased to state:

(a) what is the total generation of solar energy and other renewable energy in the country;

(b) the estimated plan for production of renewable energy; and

(c) what steps Government is taking to increase the capacity to the plan level?

THE MINISTER OF STATE IN THE MINISTRY OF POWER (SHRI JAIRAM RAMESH): (a) A grid-interactive power generation installed capacity of 11,449 MW based on various renewable energy sources has been set up in the country as on 31.01.2008. This comprises of 7,939 MW wind power, 2,062 MW small hydro power, 1,446 MW bio-power and 2 MW solar power. This apart, a large number of off-grid/decentralized renewable energy systems/devices are making a significant contribution to conservation of conventional energy.

(b) A capacity addition of 15,000 MW from renewable energy sources (14,000 MW grid-interactive and 1,000 MW off-grid/distributed) has been proposed during the Eleventh Plan period.